Building STEM pathways for Indigenous Australians: a higher education perspective

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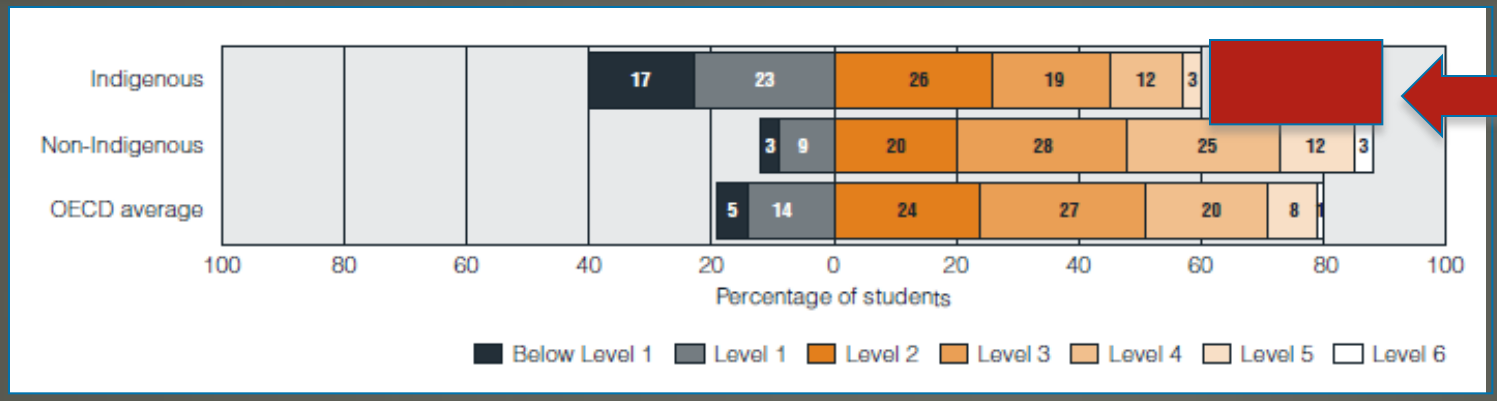
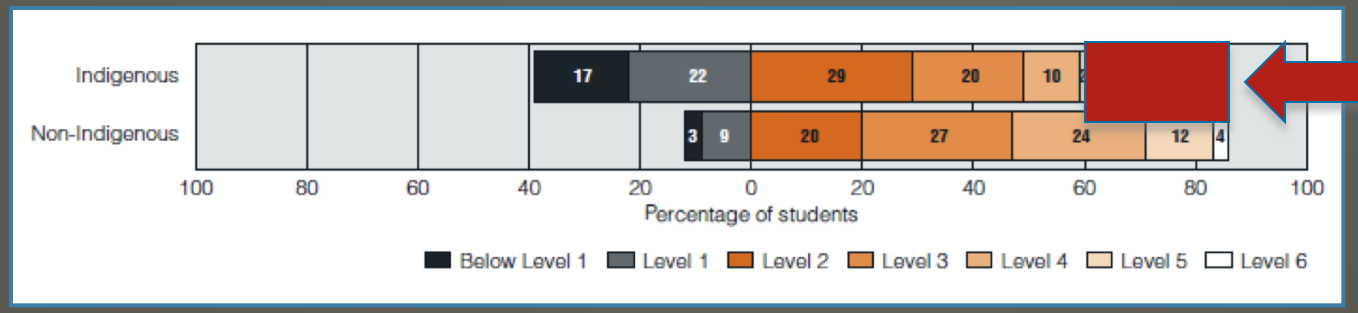
Breakdown of students by discipline

Narrow field of education	Indigenous	
	Commencing students	All students
0100 Natural and Physical Sciences	52	125
0101 Mathematical Sciences	6	11
0103 Physics and Astronomy	< 5	8
0105 Chemical Sciences	< 5	5
0107 Earth Sciences	5	20
0109 Biological Sciences	45	100
0199 Other Natural and Physical Sciences	112	265
0200 Information Technology	5	8
0300 Engineering and Related Technologies	28	55
0500 Agriculture, Environmental and Related Studies	8	18
0601 Medical Studies	89	258
0605 Pharmacy	11	22
0607 Dental Studies	14	40
0609 Optical Science	0	< 5
0611 Veterinary Studies	9	30
0615 Radiography	10	27
0907 Behavioural Science	154	350

PISA Maths Science Literacy Indigenous and non-Indigenous students



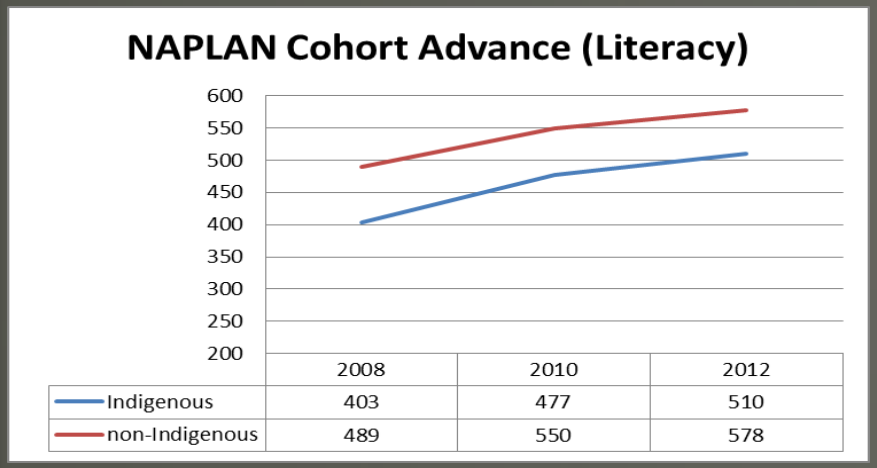
Science

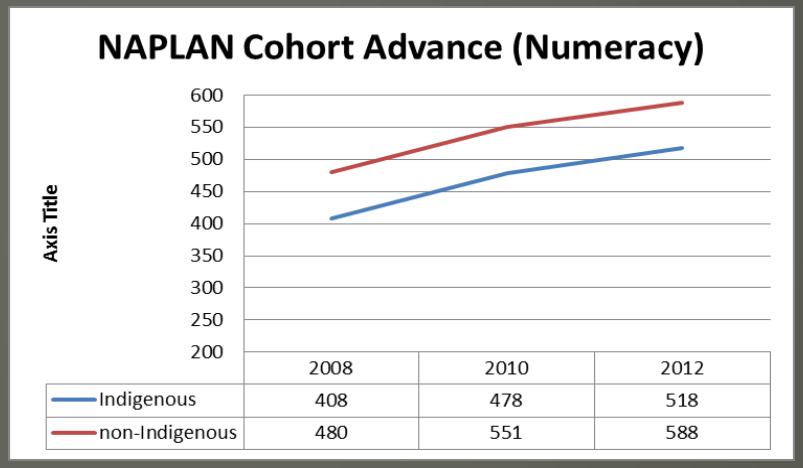


Maths

Maths & Science Literacy: PISA 2006
NIHEC 2011

NAPLAN Cohort Advance – Numeracy and Literacy





NAPLAN analysis shows that Indigenous and non-Indigenous students experience the same value add from Education.

However, Indigenous children start from a lower base do not 'catch-up'.

Science Engagement and Literacy

- Analysis of 2006 PISA Indigenous/Non-Indigenous Australian and New Zealand (Woods McConney et al 2013)
  - Science Engagement (student attitutes, interestes and self-beliefs) shown to have a correlation with Science Literacy
  - Variations in Science Engagement most strongly correlated with the extent to which students engaged with science activities outside of school
  - SES status, time spent on science lessons and study, character of science teaching explained most of the literacy variance but only weak correlation with engagement

Science Literacy and Science Interest

- Retrospective analysis of PISA 2006 (McConney et al 2011):
  - Indigenous science literacy lags non-Indigenous literacy by about 83.5 points or .76 standard deviation units
  - Indigenous science interest led that of non-Indigenous students by 10 points of 0.1 SD
  - Regressions modelling: Reading Literacy accounted for 62 per cent of science literacy variance, Science interest had a weak effect